IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for supporting P2P (Peer to Peer) communication between two user equipments in TDD CDMA systems, performed by user equipment, comprising:

receiving signals transferred via the downlink control channel by network system;

acquiring the timeslot allocation information according to the received signals;

acquiring the spreading code allocation information of other active user equipments allocated in the specific downlink timeslot associated with the direct link used by said user equipments, according to the received signals; and

reducing the interference caused by signals transferred via downlink from network system to said other user equipments during P2P communication according to the acquired timeslot allocation information and spreading code allocation information, wherein said interference reduction includes executing at least one of the methods Multi-User Detection (MUD) and Joint Detection (JD), and wherein at least one of said methods utilizes said spreading code information used by other user equipments in said downlink timeslot to reduce interference;

establishing downlink synchronization with network system and keeping downlink synchronization with network system by tracking the pilot channel;

in said downlink timeslot, when said user equipments transmit signals via said direct link, the steps taken by said user equipment includes:

(i) during establishing said direct link, setting the time of transmitting signals to the other user equipment in said downlink timeslot, according to the received time of transmit signals by network system;

(ii) transmitting test signals to the other user equipment at said set time in said downlink timeslot;

(iii) receiving feedback signal from the other user equipment, which is the time difference obtained by comparing the time at which the other user equipment receives the test signals and the received time at which the network system transmits signals in the other user equipment, after the other user equipment receiving said test signals;

(iv) setting the time advance for transmitting signals to the other user equipment according to the feedback signals; and

(v) adjusting the time at which the user equipment transmits signals to the other user equipment according to time advance, in order that the signals of downlink from network system, which are received by the other user equipment, are synchronized with the signals of said direct link from the user equipment.

2. (original) The communication method according to claim 1, wherein said spreading code allocation information at least includes the said spreading code information being used by other user equipments in said downlink timeslot.

3. (canceled).

4. (canceled).

5. (Canceled).

6. (currently amended) The communication method according to claim 5 1, further includes:

(vi) transmitting the P2P communication signals to said the other user equipment at said adjusted time for transmitting;

(vii) receiving the synchronization shift information from said the other user equipment, which is the synchronization derivation estimated according to received the P2P communication signals in said the other user equipment after receiving said P2P communication signals; and

(viii) adjusting the timing advance for transmitting signals to the other user equipment according to the synchronization shift information.

7. (currently amended) The communication method according to claim 5 1, further includes:

adjusting the time at which the user equipment transmits signals to the other user equipment during the P2P communication procedure, according to the synchronization shift information from the other user equipment, in order that the P2P communication signals transmitted by the user equipment and the downlink signals transmitted by network system can reach the other user equipment at the same time.

8. (currently amended) The communication method according to claim 5 1 wherein when the user equipment receives signals via said direct link in said downlink timeslot, the step to be taken includes:

(a) calculating the difference between the time for receiving the test signals transmitted from the other user equipment and the time for receiving the signals transmitted from network system, and sends the calculated time difference as feedback signals to the other user equipment, when receiving test signals transmitted by said the other user equipment, during the process of establishing said direct link.

9. (original) The communication method according to claim 8, wherein when the user equipment receives signals via said direct link in said downlink timeslot, the step to be taken further includes:

(b) estimating the synchronization shift information of the other user equipment according to the received P2P communication signals when the UE receives the P2P communication signals transmitted by the other user equipment, and sending the estimated synchronization shift information to the other one, during the process of establishing the said direct link.

10. (previously presented) The communication method according to claim 8, further includes:

calculating the synchronization shift information of the other user equipment according to the received P2P communication signals from said the other user equipment, and sending the synchronization shift information to the other one, during the process of P2P communication.

11. (canceled).

12. (canceled).

13. (currently amended) A user equipment for supporting P2P (Peer to Peer) communication in TDD CDMA systems, comprising:

a signal transceiver, for receiving and transmitting radio signals;

a timeslot allocation information acquiring means for acquiring the timeslot allocation information according to the information transferred via downlink control channel;

a spreading code allocation information acquiring means for acquiring the spreading code allocation information of other active user equipments in a specific downlink timeslot which is used when the UE is receiving signals via the direct link between the UE and the other one, according to the information transferred via downlink control channel; and

a interference reducing means for reducing the interference caused by downlink signals transmitted from network system to other user equipments during P2P communication process according to the acquired timeslot allocation information and spreading code allocation information, wherein said interference reducing means executes at least one of the methods Multi-User Detection (MUD) and Joint Detection (JD) to reduce interference, and wherein one of said methods reduce interference by using said spreading code information used by other user equipments in said downlink timeslot;

a synchronization means, for establishing downlink synchronization with network system at the cell search phase, and keeping downlink synchronization with the network system by tracking the pilot channel;

a transmitting time setting means, for setting the time for transmitting signals to the other user equipment in said downlink timeslot, according to the time for receiving the transmitting signals from the network system, in the process of establishing the said direct link;

a test signals transmitting means, for transmitting test signals to the other user equipment at the set time in said downlink timeslot;

a feedback signal receiving means, for receiving feedback signals from the other user equipment, which is the time difference obtained by comparing the time for receiving test signals and the time for receiving the transmitting signals from the network system in the other user equipment, after the other user equipment receiving the test signals;

a time advance setting means for setting the time advance for transmitting signals to the other user equipment; and

a transmitting time adjusting means based on said feedback signals, for adjusting the transmitting time at which the user equipment transmits signals to the other user equipment according to the time advance, in order that the signals transferred via downlink from network system, which are received by the other user equipment, are synchronized with the signals transferred via said direct link from said user equipment.

14. (original) The user equipment according to claim 13, wherein said spreading code allocation information at least includes the spreading code information being used by other user equipments in said downlink timeslot.

15. (canceled).

16. (canceled).

17. (canceled).

18. (currently amended) The user equipment according to claim ~~17~~ 13, further includes:

a synchronization shift information receiving means, for receiving the synchronization shift information from said the other user equipment, which is the synchronization derivation estimated by the other user equipment after receiving P2P communication signals, according to the received P2P communication signals; and

a transmitting time adjusting means based on synchronization shift information, for adjusting the timing advance for transmitting signals to said the other user equipment according to said synchronization shift information.

19. (currently amended) The user equipment according to claim ~~17~~ 13, further includes:

a feedback signals generating means, for calculating the difference between the time for receiving test signals and the time for receiving signals transmitted from network system, and sending the calculated difference as feedback signals to the other user equipment when receiving the test signals transmitted by the other user equipment, during the process of establishing said direct link.

20. (original) The user equipment according to claim 19, further includes:

a synchronization shift information generating means, for estimating the synchronization shift information of the other user equipment according to the P2P communication signals when the

UE receives P2P communication signals transmitted by said the other user equipment, and sending the estimated synchronization shift information to the other one.

    21. (canceled).

    22. (canceled).